# POLIOMYELITIS FACT SHEET
## (Infantile paralysis, Polio)

**Agent:** Poliovirus serotypes 1, 2, and 3.

**Brief Description:** A highly contagious viral infection with manifestations ranging from inapparent infection to non-specific febrile illness, aseptic meningitis, paralytic disease and death. Symptoms include fever, headache, sore throat, gastrointestinal upset, malaise, and stiffness of neck and back. In approximately 0.1% to 2% of cases, symptoms include a flaccid paralysis typified by absent deep tendon reflexes; in approximately 1 out of 250 cases, residual neurologic symptoms occur, including paralysis.

**Reservoir:** Humans.

**Mode of Transmission:** Primarily person-to-person spread, principally through the fecal-oral route but also by the respiratory route; fecal-oral transmission occurs in situations where sanitation is poor. However, where sanitation is good, pharyngeal spread may be more apparent. In rare instances, milk, foodstuffs and other materials contaminated with feces have been incriminated as vehicles. There is no reliable evidence of spread by insects; sewage and water are rarely implicated.

**Incubation Period:** Usually 6 to 20 days, with a range of 3 to 35 days.

**Clinical Case Definition:** Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss.

**Laboratory Criteria for Diagnosis:** Case confirmation is based on a clinical definition. However, a probable case can be supported by laboratory information. Diagnosis is made by isolation of the organism from throat, stool, rectum, cerebrospinal fluid (CSF), or blood. The highest probability of isolation is achieved when two stool and throat specimens are obtained twenty-four hours apart. These should be sent to the Georgia Public Health Laboratory for primary isolation. The state laboratory will forward isolates to the Centers for Disease Control and Prevention (CDC) for Polymerase Chain Reaction (PCR) and antibody blocking testing to determine intratypic variation. This will determine whether a paralytic polio case is derived from wild-type or vaccine related virus.

**Diagnostic Testing:**

A. Culture

1. Specimen Needed: Stool, throat swab, rectal swab, CSF, or blood.
2. Outfit: Viral culture outfit, order #0575.
3. Form: 3595R.
4. Lab Test Performed: Isolation and identification of poliovirus.
5. Lab Performing Test: State Virology Laboratory, Georgia Public Health Laboratory (GPHL) in Decatur, followed by intratypic differentiation performed at the CDC.
6. Transport Requirements: Collect within 72 hours of onset of symptoms; specimens should be frozen immediately and shipped on dry ice.

**Comment:** Isolation of wild-type virus constitutes a public health emergency and appropriate control measures must be initiated immediately (in consultation between health care providers, state and local health departments, and CDC).

B. Serology

1. Specimen Needed: Acute and convalescent sera, or whole blood.
   a. Acute sera: 2-3 cc collected as soon as possible after onset of illness.
   b. Convalescent sera: 2-3 cc whole blood collected 14-21 days after acute phase of illness.

2. Outfit: Serology, order #0504.
3. Form: 3432 (revised 4/00).
4. Lab Test Performed: Neutralizing antibody titers to poliovirus serotype 1, 2, and 3.
5. Lab Performing Test: CDC with prior arrangement by the Georgia Public Health Laboratory. *Do not submit specimens directly to CDC. All specimens must be submitted to the Georgia Public Health Laboratory.*

**Case Classification:**

- ***Probable:*** A case that meets the clinical case definition.
- ***Confirmed:*** A case that meets the clinical case definition and in which the patient has a neurologic deficit 60 days after onset of initial symptoms, has died, or has unknown follow-up status.

**Vaccination:** There are two types of polio vaccine: the Inactivated Polio Vaccine (IPV) and the Oral Polio Vaccine (OPV). The IPV is given intramuscularly or subcutaneously, and OPV, a live attenuated virus, is given orally. The Advisory Committee for Immunization Practices (ACIP) recommends a four-dose schedule of IPV for routine immunization of infants and children. The first three are given at two-month intervals beginning at 2 months of age (the third dose can be given between 6 and 18 months.) The fourth dose is given at age 4 to 6 years, before entering school.

Oral polio vaccine (OPV) is no longer routinely recommended in the United States because of the continued risk for vaccine-associated paralytic poliomyelitis (VAPP), the absence of indigenous disease, and the low risk for wild poliovirus importation into the United States. OPV, however, is used and recommended in the United States in certain circumstances:

(1) Mass-vaccination campaigns to control polio outbreaks.
(2) Unvaccinated children who will be traveling to endemic or epidemic areas in less than 4 weeks. (For children traveling at later dates, two doses of IPV, spaced 1 month apart at minimum, provide adequate protection.)
(3) Children of parents who do not accept the four-dose IPV schedule. In these cases, OPV can be given exclusively for the third or fourth dose, or both. In this situation, the risk of VAPP should be discussed with parents of caregivers prior to administration of OPV.

OPV is recommended for use in outbreak settings because higher seroconversion rates are observed after a single dose, a greater degree of intestinal immunity is achieved, which limits community spread of wild-type virus, and beneficial secondary spread through intestinal shedding of vaccine virus improves overall protection in the community. Notwithstanding the above situations, OPV should be avoided if any household contacts are immunosuppressed.

Most adults in the United States are at low risk for polio due to immunizations received in childhood. Certain adults are at high risk however, and should be vaccinated. These adults are:

(1) Travelers to areas or countries where polio may be epidemic or endemic.
(2) Members of communities with disease caused by wild-type polio.
(3) Laboratory workers handling specimens that may contain wild-type polio.
(4) Health-care personnel in close contact with patients who may be excreting wild-type polio.
(5) Unvaccinated adults whose children will be receiving oral poliovirus vaccine.

The immunization schedule is: two doses of IPV at an interval of 1 to 2 months and a third dose given 6 to 12 months later.

**Period of Communicability:** Not accurately known, but transmission is possible as long as virus is excreted. Virus is demonstrable in the throat as early as 36 hours after exposure and in the feces 72 hours after exposure to infection in both clinical and inapparent cases. Virus persists in the throat for approximately 1 week and in the feces for 3 to 6 weeks or longer. Cases are most infectious during the first few days before and after onset of symptoms.

**Treatment:** None except attention during the acute illness to the complications of paralysis.

**Investigation:** The Epidemiology Branch will give instructions regarding investigation when a case is reported by phone. The following information should be collected as part of the investigation:

1. Demographic Information: The name, age, sex, race, occupation, and address (county, city and zip code) of the patient.

2. Immunization History: The number, dates and lot numbers of previous doses of inactivated polio vaccine (IPV) and the number, dates, type (monovalent versus trivalent) and lot numbers of previous doses of oral polio vaccine (OPV). Information on the number, site and types of injections given at either the time of vaccination or within 30 days after vaccination should also be collected.

3. Clinical Information: A brief description of the patient's illness including the date of onset of paralysis. Information should include the course of the illness and the sites of paralysis or other complications.

4. Immunologic Status: Since persons with some immune deficiency diseases are at increased risk of paralytic poliomyelitis, known immune deficiency either in the patient or patient=s family should be documented. If any doubt exists, an immunologic evaluation (quantitative immunoglobulins, T and B cell quantitation, lymphocyte transformation, etc.) should be considered.

5. Exposure History:

    1. History of recent travel of the patient or a close contact outside of the United States to an endemic or epidemic area for poliomyelitis.

    2. History of contact with any known cases of poliomyelitis and the date of contact, if applicable.

    3. History of receipt of OPV by the patient within 30 days prior to onset, including the date of receipt and the lot number of the vaccine.

    4. History of contact within 30 days prior to onset of symptoms with any person who received OPV within the last 60 days prior to onset, including the date of contact, the nature of the contact, the date the contact received OPV, the lot number of the vaccine, the age of the contact, and the relationship to the patient. Information regarding the contact's prior history of immunization with IPV should also be collected.

6. Laboratory Data: For the diagnosis of suspected cases, original specimens are most desirable because special methods are used to determine if viruses other than polioviruses are present. Types of laboratory tests are described above in "Diagnostic Testing."

**Reporting:** Report cases **IMMEDIATELY** by phone to the local health department, District Health Office, or the Epidemiology Branch at 404-657-2588. If calling after regular business hours, it is very important to report cases to the Epidemiology Branch answering service. After a verbal report has been made, please transmit the case information electronically through the State Electronic Notifiable Disease Surveillance System (SENDSS) at http://sendss.state.ga.us, or complete and mail a GA Notifiable Disease Report Form (#3095). Districts should complete the information above under "Case Investigation" and forward as soon as possible to the Epidemiology Branch.

**Reported Cases of Poliomyelitis in Georgia, 1993-1999**

| Year | Number of Cases |
|---|---|
| 1993 | 0 |
| 1994 | 0 |
| 1995 | 0 |
| 1996 | 0 |
| 1997 | 0 |
| 1998 | 0 |
| 1999 | 0 |

**References:**


1. American Academy of Pediatrics. Poliovirus Infections. In: Peter G and Pickering L, Ed. *2000 Red Book: Report of the Committee on Infectious Diseases.* 25th Ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000: 465-470.
2. CDC. Case Definitions for Infectious Conditions Under Public Health Surveillance. *MMWR* Vol. 46(RR10); 1997: 1-55.
3. Centers for Disease Control and Prevention. Manual for the surveillance of vaccine-preventable disease. Centers for Disease Control and Prevention: Atlanta, GA, 1999.
4. Centers for Disease Control and Prevention. Developing and Expanding Contributions of the Global Laboratory Network for Poliomyelitis Eradication, 1997-1999. MMWR Vol. 49(08); 2000: 156-160.
5. Centers for Disease Control and Prevention. Poliomyelitis Prevention in the United States. Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* Vol. 49(RR-5); 2000: 1-22.
6. Chin J, ed. Poliomyelitis, Acute. In: Control of Communicable Diseases Manual. 17th ed. Washington, DC: American Public Health Association, 2000: 398-405.
7. Edwards E, Grant C, Huang Q, Powell K, Croxson M. A case of vaccine-associated paralytic poliomyelitis. J Paediatr Child Health Vol. 36(4); 2000: 408-11.
8. Updated Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Vol. 49(RR-5); 2000: 1-22.


**Links:**

- CDC National Immunization Program– http://www.cdc.gov/nip/publications/pink/polio.pdf